UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,065	06/15/2005	Teodor Aastrup	69501-79362	4263

26288 7590 02/01/2010
Aibihns.Zacco AB
P.O. Box 5581
Valhallavagen 117
STOCKHOLM, SE-114 85
SWEDEN

EXAMINER	
HYUN, PAUL SANG HWA	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
02/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,065	AASTRUP ET AL.	
	Examiner	Art Unit	
	PAUL S. HYUN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-14,32-38,40,41,43 and 46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-5,7,8,14,32-38,40,41,43 and 46* is/are rejected.

7)☒ Claim(s) *6,9,7,9,8,9,9,9,10,9,11,9 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed by Applicant on November 11, 2009 has been acknowledged. Claims 2-14, 32-38, 40, 41, 43 and 46 are currently pending. Applicant amended claim 13 and cancelled claim 39. Claims 6 and 9-13 were previously indicated as containing allowable subject matter.

The claim rejections under 35 U.S.C. section 112 cited in the previous Office action have been withdrawn in light of the amendment.

Applicant's arguments with respect to the rejection of claims 2, 5, 7, 8, 14 and 43 under 35 U.S.C. section 102(b) as being anticipated by Kösslinger et al. have been fully considered and they are persuasive. The Examiner agrees with Applicant that the device disclosed by Kösslinger et al. does not comprise a flow cell element that comes into abutment with a piezoelectric crystal. Therefore, the rejection of claims 2-5, 7, 8, 14 and 43 based on Kösslinger et al. have been withdrawn.

Applicant's arguments with respect to the rejection of claims 32, 35, 38 and 40 under 35 U.S.C. section 102(b) as being anticipated by Kösslinger et al. have been fully considered, but they are not persuasive. Therefore, the rejections of claims 32-38, 40 and 41 based on Kösslinger et al. are maintained.

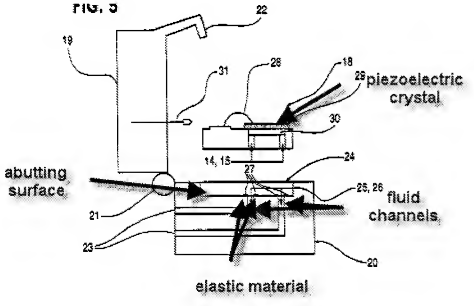
In addition, because Applicant did not traverse the rejection based under 35 U.S.C. section 103(a) as being unpatentable over Tom in view of Kösslinger et al., the rejections based on these two references are also maintained.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **32, 35, 38 and 40** are rejected under 35 U.S.C. 102(b) as being anticipated by Kösslinger et al. (US 6,196,059 B1).

Kösslinger et al. disclose a quartz crystal microbalance (QCM) gas sensor (see Fig. 5 reproduced below).



The sensor comprises an abutting part comprising a pair of recesses connected to a pair of channels wherein each recess is surrounded by an elastic material in the form of seal rings 27. The recesses are covered by a structure that accommodates a piezoelectric crystal 29.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **33 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kösslinger et al. in view of Ganter (US 4,548,514).

Kösslinger et al. do not disclose the hardness of the elastic sealing material.

Ganter discloses an elastic sealing material in the form of an O-ring having a Shore hardness of the order of 50 to 60 (see lines 1-5, col. 5). The reference discloses that such hardness provides liquid-tight seal while providing flexibility in the form of compression (see line 68, col. 4). In light of the disclosure of Ganter, it would have been obvious to one of ordinary skill in the art to use a material having Shore hardness in the order of 50 to 60 to make the elastic material disclosed by Kösslinger et al.

Claim **41** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kösslinger et al. in view of Sheffler (US 4,569,438).

Kösslinger et al. do not disclose the material from which the elastic material is made.

Sheffler discloses an elastic gasket for providing a fluid tight seal between a lid and a container wherein the gasket is made from polyurethane (see line 63, col. 4). In light of the disclosure of Sheffler, it would have been obvious to one of ordinary skill in the art to make the elastic material disclosed by Kösslinger et al. out of polyurethane.

Claims **2, 5, 7, 8, 14, 32, 35, 38, 40 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom (US 6,029,500) in view of Kösslinger et al.

Tom discloses a QCM sensor comprising a first part 152, a second part 160, and an electronics module 166 (see Fig. 1). The first part comprises a pair of holes for receiving a sensor element 154 wherein the sensor element comprises a piezoelectric quartz crystal 300 coated with conductive metal 306 and 308 (see Fig. 4). The second part 160 comprises an inlet channel 164, an outlet channel opposite the inlet channel, and a recess at the top for accommodating the first part 152 and the piezoelectric element. The device disclosed by Tom differs from the claimed invention in that Tom does not disclose an elastic material that provides a seal between the first part and the second part.

Kösslinger et al. disclose a QCM sensor comprising a base having fluid channels formed therein, and a piezoelectric quartz crystal sensor wherein the base comprises an opening for accommodating the sensor for communicating the sensor with the fluid channels (see above for more detailed description). The base comprises an elastic material 27 that provides a seal between the fluid channels formed in the base and the piezoelectric element. In light of the disclosure of Kösslinger et al., it would have been obvious to one of ordinary skill in the art to provide an elastic material between the first part 152 and the second part 160 of the device disclosed by Tom to provide a fluid-tight seal.

Claims **3, 4, 33 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom in view of Kösslinger et al. as applied to claims 2, 5, 7, 8, 14, 32, 35, 38-40 and 43 above, and further in view of Ganter.

Neither Tom nor Kösslinger et al. disclose the hardness of the elastic sealing material.

Ganter discloses an elastic sealing material in the form of an O-ring having a Shore hardness of the order of 50 to 60 (see lines 1-5, col. 5). The reference discloses that such hardness provides liquid-tight seal while providing flexibility in the form of compression (see line 68, col. 4). In light of the disclosure of Ganter, it would have been obvious to one of ordinary skill in the art to use a material having Shore hardness in the order of 50 to 60 to make the elastic material of the modified Kösslinger et al. device.

Claims **36, 37 and 46** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom in view of Kösslinger et al. as applied to claims 2, 5, 7, 8, 14, 32, 35, 38-40 and 43 above, and further in view of Caron et al. (US 5,992,215).

Neither Tom nor Kösslinger et al. disclose the dimensions of the recess formed in the base for accommodating the piezoelectric element. Caron et al. disclose a QCM sensor wherein the thickness of the piezoelectric element ranges from 0.1 mm to 1 mm (see line 31, col. 3). In light of the disclosure of Caron et al., it would have been obvious to one of ordinary skill in the art to dimension the recess of the modified Tom device such that the depth/width of the recess in the base ranges between 0.1 and 1 mm. A recess having such dimensions would properly accommodate the piezoelectric element.

Allowable Subject Matter

Claims 6 and 9-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Kösslinger et al. and Tom both disclose a QCM sensor comprising multiple parts that are assembled together. Both devices comprise an electrode-coated piezoelectric element that is accommodated by a base having fluid channels formed therein. However, neither reference discloses the elements recited in the allowable claims that actuate the device between a first position and a second position. Specifically, neither reference discloses guide rods (claim 6) nor handle-operated threads (claims 9 and 10) that move the base with respect to the piezoelectric element between two positions. In addition, the cited references do not disclose electrical contact areas as recited in claims 11-13.

Response to Arguments

1) Applicant's arguments with respect to the rejection of claims 2, 5, 7, 8, 14 and 43 under 35 U.S.C. section 102(b) as being anticipated by Kösslinger et al. have been fully considered and they are persuasive. The Examiner agrees with Applicant that the device disclosed by Kösslinger et al. does not comprise a flow cell element that comes into abutment with a piezoelectric crystal. Therefore, the rejections of claims 2-5, 7, 8, 14 and 43 based on the Kösslinger et al. reference have been withdrawn.

2) Applicant's arguments with respect to the rejection of claims 32, 35, 38 and 40 under 35 U.S.C. section 102(b) as being anticipated by Kösslinger et al. have been fully considered but they are not persuasive.

Before addressing Applicant's arguments, it should be noted that while claim 32 is dependent on claim 43, it does not include the limitations of claim 43. Claim 43 is only referenced to define the intended use of the invention of claim 32. That said, Applicant argues that claim 32 is allowable because Kösslinger et al. do not disclose a recess surrounded by an abutting surface made of an elastic material that is capable of forming a seal against a piezoelectric quartz crystal. This argument is not persuasive. As indicated in the rejection above, Kösslinger et al. disclose a device having a pair of recesses that are connected to a pair of channels. Each recess is surrounded by a sealing material that is capable of forming a seal with a piezoelectric quartz crystal. Because of the limitation "capable", the sealing material disclosed by Kösslinger et al. need not actually contact a piezoelectric quartz crystal to anticipate claim 32. For the foregoing reason, the rejections of claims 32-38, 40 and 41 are maintained.

Because the Office action includes new grounds of rejection, namely the rejection of claims 3, 4, 33 and 34 under 35 U.S.C. 103(a) as being unpatentable over Tom in view of Kösslinger et al. and Ganter, the Office action remains non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL S. HYUN whose telephone number is (571)272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paul S Hyun/
Examiner, Art Unit 1797

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797